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Original article

Lichen Planus - A Clinicopathological Correlation from a Tertiary Care Institute in Chhattisagrh

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Abstract

***Background*:** Lichen planus is a mucocutaneous disorder of unknown aetiology with mucosal involvement seen in 30-70% of cases. Histopathology is a reliable tool to diagnose lichen planus and differentiate it from other lichenoid eruptions. ***Methodology*:** 103 patients aged ≥18 years consecutively attending the outpatient clinic with clinical features suggestive of cutaneous and/or oral LP were recruited. A detailed data collection proforma including the demographic details was filled and clinical examination was done. The diagnosis of LP was confirmed by biopsy. An attempt to study the clinico-pathological correlation was made. ***Results*:** We studied 103 patients of lichen planus with ages ranging from 18- 77 years with the mean age being 45.8 years. In males, the peak prevalence was between the ages of 35-44 years while in the females, it was in the range of 45-54 years. There was no gender predilection in our study. ***Conclusion*:** Hypertrophic and classical types of CLP, and reticular and erosive types of OLP were common patterns in our study population. There was agreement between the clinician and the pathologist in 85% of cases.

Keyword: ***lichen planus***, ***histopathology***, ***Chhattisgarh***

Introduction

Lichen planus (LP) is a common dermatosis with global distribution. LP is a distinct, self-limiting papulosquamous disorder of unknown cause that affects the skin, mucous membranes, nails and hair.[1] There is no predilection for any ethnic groups.[2] The precise aetiopathogenesis is not yet defined but an immunological mechanism is hypothesized to be instrumental in the pathogenesis of the disease. Cutaneous LP (CLP) is the most commonly reported form of the disease followed by Oral LP (OLP). There are various clinical patterns of each subtype with continuous addition of newer variants described mostly as case reports. Fortunately, in most instances the diagnosis is secured as the underlying histology is essentially the same.

Lichenoid tissue reaction pattern encompasses a wide spectrum of clinical diseases. Recently new sub-groups of lichenoid pattern have been described. The prototype of all forms of lichenoid eruption is LP. Histopathology may help to develop a concept of the tissue reaction patterns and in establishing the diagnosis in cases where clinical dilemma exists. Also, LP affecting the nails bears a resemblance to psoriatic nails and fungal infection of nails. Histopathological examination is more valuable in such cases and in OLP. We aimed to assess clinical diagnostic accuracy of LP by biopsy findings and to determine clinico-pathological correlation of cutaneous and oral LP.

Materials and Methods

A cross sectional study was conducted in the Departments of Dermatology, Venereology & Leprosy and General Pathology in Chandulal Chandrakar Medical College, Durg between April 2017-March 2018.

All patients aged ≥18 years consecutively attending the dermatology outpatient clinic with clinical features suggestive of cutaneous and/or mucosal LP were included in the study after informed consent. A detailed data collection proforma was filled which included basic demographic data such as age, sex and occupation of the patient. Data were also collected regarding associated symptoms, duration of disease, personal habits, seasonal variation, associated co-morbidities, concomitant medications and family history of LP and cardiovascular diseases.

The morphology, colour, pattern and site of lesions were recorded. The additional involvement of skin, scalp, nail, genitalia and palms and soles was also recorded. The diagnosis of LP was established by clinical features and a skin or mucosal biopsy of the most representative lesion as indicated was done. In those with more than one morphological type, the biopsy was done from the predominant lesion. When there was concomitant oral and cutaneous involvement, cutaneous lesion was biopsied. A clinicopathological correlation was made. The biopsies which were

consistent with a diagnosis of LP were further reviewed by the dermatopathologist to record the prevalence of key changes like hyperkeratosis, hypergranulosis, irregular acanthosis, basal cell liquefaction, band like infiltrate and civatte bodies and to compare the above findings in different histopathological subtypes of LP. Clinical photographs of lesions were taken after patient's consent.

Statistical methods

The data was entered in Epidata (version 3.1), a data management software to reduce errors. Descriptive statistics were presented using frequencies and percentages. Chi-square test was used to compare the clinical findings and histological findings.

The study was discussed and approved by the institutional ethics committee and review board.

Results

A total of 103 patients were included in the study. The distribution of males and females was almost equal in the study population (males= 51, females=52). The ages of the patients ranged from 18-77 years with the mean age being 45.8 years (SD 14.6). Among males, the peak prevalence was between the ages of 35-44 years while among females it was in the range of 45-54 years. There was no significant seasonal variation among the cases studied. There was no specific correlation of LP with occupational types. The patients' occupation ranged from daily wage labourers to professionals. A significant number of housewives were also affected with LP.

The most common site of involvement was skin (67.9%) followed by oral mucosa (40.7%). There were 9 patients with cutaneous and oral features of LP. There were two patients among the cases who also had genital mucosal involvement and three patients with nail involvement.

Cutaneous Lichen Planus

The most common symptom for which patients sought medical advice was colour change associated with skin lesions (100%). Pruritus was seen in 74% of the cases but the degree varied across the cases depending on the types and distribution of lesions. Burning sensation over the skin lesions was seen in only 10% of those affected. There was overlap of symptoms and most of the patients who had colour change also complained of itching. Sleep disturbance secondary to severe pruritus was seen only in 10% of patients.

Table 1: Morphological types of clinically diagnosed CLP

LP Subtype	No. of Cases n =70	Percentage (%)
Classical	31	44.3
Hypertrophic plaques	25	35.7
Bullous	02	2.8
Actinic	02	2.8
Atrophic	02	2.8
Follicular LP	05	7.1
Lichen planus pigmentosus	03	4.2

The most common clinical types of CLP were classical and hypertrophic in our study population (Table 1). Lower limb was the most common site of involvement in cases of CLP (73.8%). More than one site was involved in 17 of 70 cases (24.2%). Upper limbs were also involved in 6 patients with lower limb involvement. Of the 10 cases with facial involvement, eight involved the upper limbs as well. Isolated facial lesion was seen in just one patient.Wickham's striae were seen in 62.8% of cases of CLP. Nearly 34% of patients showed koebnerization.

Oral Lichen Planus

In cases of OLP colour change was again the most common complaint (92.8%). A significant percentage of the patients also complained of burning sensation (64.2%) and discomfort caused by hot/spicy food (69%). Many patients who complained of discomfort by hot/spicy food had colour changes as well. All 8 patients who had bleeding also complained of colour changes and discomfort by hot/spicy food. Among the 42 cases of OLP clinically there were 12 patients who were smokers and 3 of them were occasional consumers of alcohol. Tobacco chewing was also seen in 28.5% (12/42) of patients. There were 4 patients with all the 3 habits. Only 1 patient gave history of dental restorative material used 3 years prior to developing OLP. A single patient gave family history of LP in the population studied.

The buccal mucosa was the most common site involved (66.7%). The lesions were usually bilateral (18/28=64.3%). In some patients the lesions over the lips involved the vermilion border (8/17=47%). Palatal lesions were uncommon and seen only in 14.3% of cases. Palatal lesions were not seen in isolation except for a single patient. The additional site in patients with palatal involvement was the buccal mucosa (4/6= 66.7%).

Table 2: Morphological types of clinically diagnosed OLP

Morphology	Number of cases n=42	Percentage (%)
Reticular	18	42.9
Violaceous patch	11	26.2
Violaceous papule	2	4.8
Hyperpigmented patch	8	19
Erosive	12	28.6
Bullous	3	7.1

**Few patients had ≥ 1 morphology*

Reticular pattern was the most common finding in cases of OLP (42.9%) followed by erosive (28.6%) and violaceous patch (26.2%) (Table 2).

Table 3: Correlation between clinical diagnosis and histopathological diagnosis

Correlation	Number	Percentage (%)
Clinico-Pathologically concordant	88	85.4
Clinico-Pathologically discordant	14	13.5
Non specific histology	1	0.9

Of the 103 cases biopsied, a total of 88 patients were diagnosed by histopathological confirmation. Of these, 63 were CLP, 24 OLP and one LP of the nails. There was agreement between the clinical diagnosis and histopathological findings in 85% cases (Table 3). There were 15 cases which were histologically discordant. Eight of them showed lichenoid infiltrate but lacked other features of LP and one had non-specific histology. The rest of the cases included patients with LSC (2), psoriasiform dermatitis (1) verruca (1), pilomatricoma (1) and amyloidosis (1).

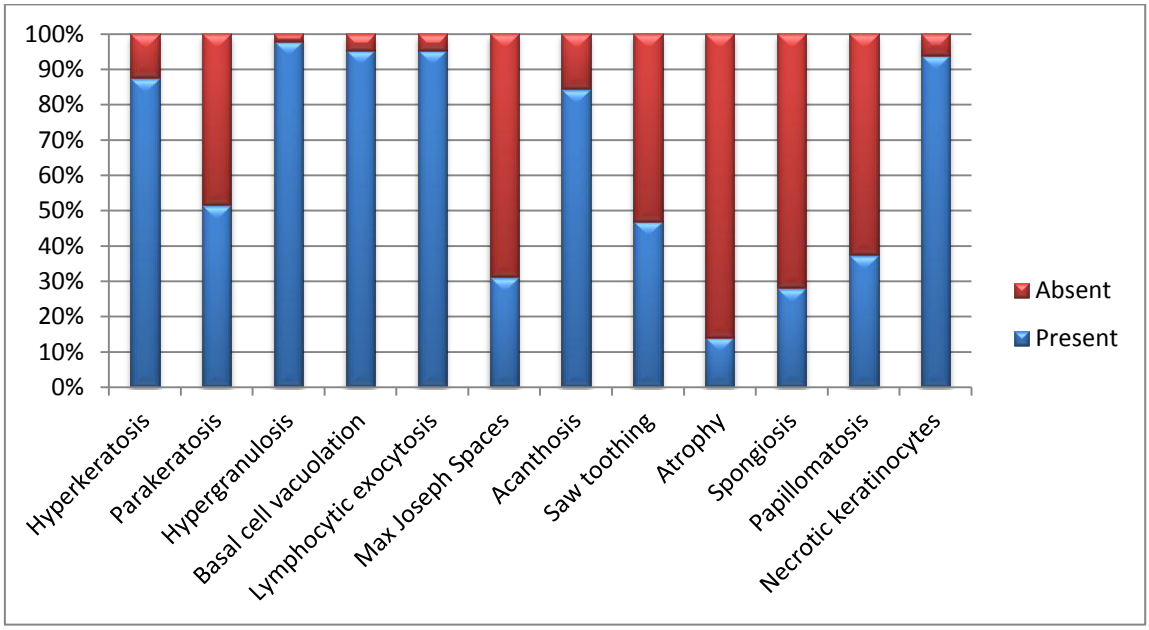

Figure 1: Epidermal histopathological findings in CLP

The most common epidermal changes seen on histopathological examination of cases of CLP were lymphocytic exocytosis, basal cell vacuolation and necrotic keratinocytes (figure 1). Hyperkeratosis, irregular acanthosis and focal hypergranulosis were also common.

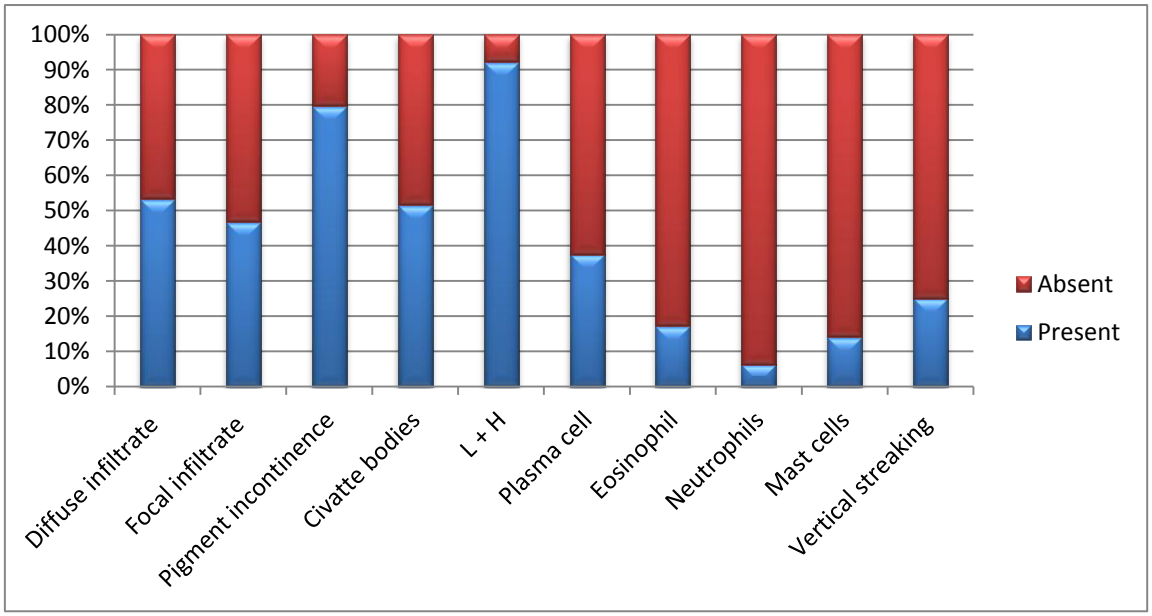

Figure 2: Dermal histopathological findings in CLP

The most common dermal change seen on histopathological examination was the presence of band like infiltrates of inflammatory cells predominantly consisting of lymphocytes and histiocytes (L+H) (figure 2). It was present in >90% and was almost equally distributed as diffuse and focal patterns. Pigment incontinence was seen in 80% of cases and Civatte bodies in 52%.

Table 4: Distribution of histopathological findings in confirmed CLP variants

	Hypertrophic LP (n=22)	Classical LP (n=20)	Bullous LP (n=5)	Follicular LP (n=5)
Hyperkeratosis	21(95.5%)	17(85%)	5(100%)	5(100%)
Hypergranulosis	16(72.7%)	20(100%)	4(80%)	5(100%)
Acanthosis	20(90.9%)	17(85%)	4(80%)	4(80%)
Basal cell liquefaction	21(95.5%)	19(95%)	4(80%)	5(100%)
Band like infiltrate (diffuse + focal)	20 (90.9%) (8 + 12)	19(95%) (9 + 10)	5(100%) (4 + 1)	5(100%) (2 + 3)
Civatte bodies	12(54.5%)	9(45%)	3(60%)	1(20%)
Parakeratosis	20(90.9%)	5(25%)	3(60%)	0
Vertical streaking	15(68.1%)	0	0	0

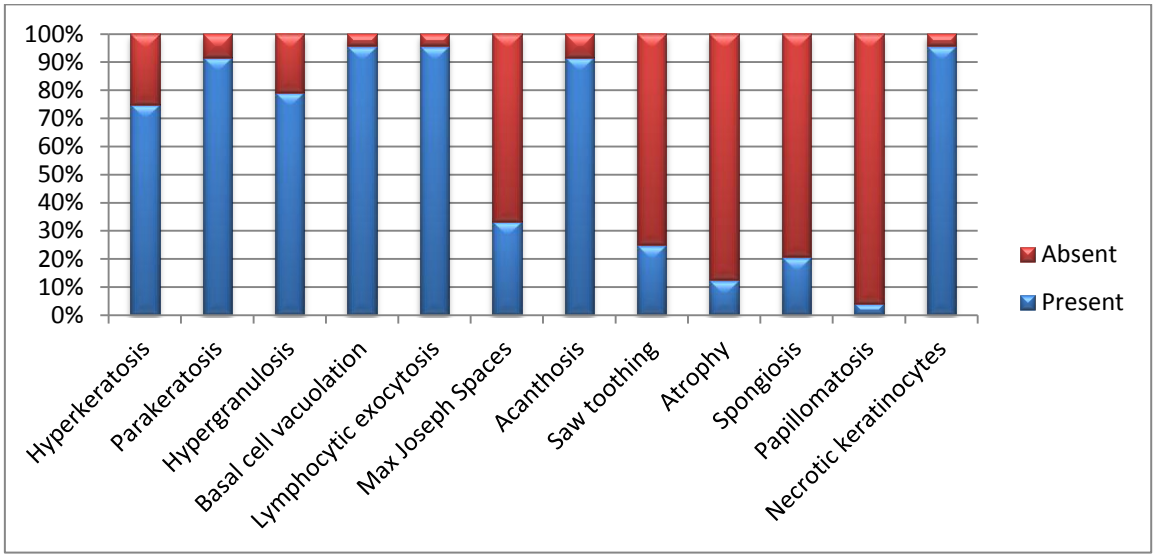

Figure 3: Epidermal histopathological findings in OLP

The most common epidermal changes seen on histopathological examination of OLP were lymphocytic exocytosis and basal cell vacuolation (figure 3). Parakeratosis was also seen in a significant proportion of cases (91.7%).

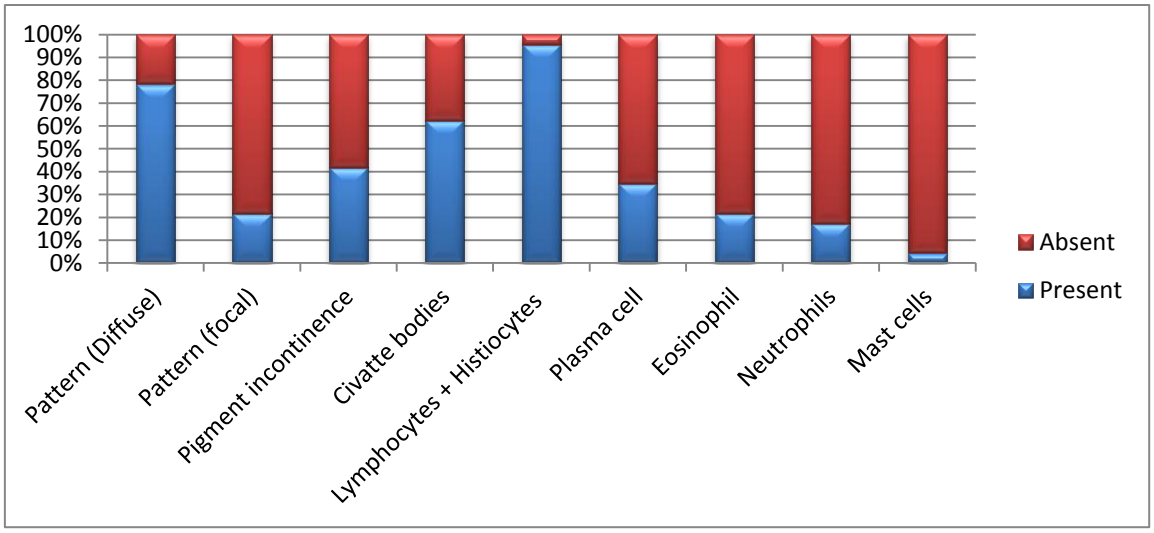

Figure 4: Dermal histopathological findings in OLP

The most common dermal change seen on histopathological examination was the presence of band like infiltrates of inflammatory cells (figure 4). It was present in 23 (96%) cases and was predominant a diffuse pattern. Most common type of cells seen in the infiltrates were lymphocytes and histiocytes.

Discussion

Lichen planus (LP) is a common dermatosis that affects the skin, mucous membranes, nails and hair. Incidence of LP varies in different geographical regions. CLP is the most commonly reported form of the disease followed by OLP. CLP affects 0.2% to 1% of the adult population[3]. In a recent study from South India, the prevalence of LP was 0.64%[4]. OLP has a higher prevalence ranging from 1-3% in adult population[2]. There are only a few studies done worldwide in which clinico-pathological correlation of both oral and cutaneous LP has been studied.

We studied 103 patients with clinically diagnosed LP during the study period. Males and females were almost equally distributed in the study population (males= 51, females=52). The ages of the patients ranged from 18- 77 years with mean age being 45.8 years. In males the peak prevalence was between the ages of 35-44 years, while in the females it was in the range of 45-54 years. In studies by Andreason, McClatchey and Scully et al peak prevalence was seen in the age groups of 41-50 years[5,6]. In another study by Vincent et al, cases of LP were more common in seventh decade[7]. In parallel with our study, Singh et al from India also reported cases clustered in the third decade[8]. Mahesh et al have reported higher prevalence of LP in the younger age groups[9]. There was no gender predilection found in our study as in most other studies from different parts of the world[1,10].

In our study, no significant seasonal variation was found. However, Alabi et al have reported higher cases in the rainy season[11]. We did not find any correlation to any occupational types as in a study done by Tompkins[12].

In our study, 28% of patients of OLP were smokers and an equal number were tobacco chewers. Smoking has been mentioned as a possible causative factor of OLP by Pindborg et al[13] in a large study from South India. They have also have reported a high incidence of OLP (1.5%) among tobacco chewers[14].

In our study, the most common site of involvement was skin (67.9%) followed by oral mucosa (40.7%). Among the cases of CLP, lower limb was the most common site of involvement (73.8%) as in the study by Singh et al[8]. Among the OLP cases, buccal mucosa was the most common site involved (66.7%). The involvement of buccal mucosa was bilateral in 64.3% (18/28). Predominant involvement of buccal mucosa has been reported in other studies also[5,7,15]. Genital involvement was seen in two cases and nail involvement in one case. In a study by Singh et al, nail changes were seen in 1.6% cases[8].

Most prominent symptomatology for which patients sought medical advice in our study was colour change associated with skin or oral lesions and pruritus. Garg et al have reported the presence of itching in almost all cases of LP[16]. In our study, symptomatic OLP was seen in 92.8% of the patients studied which is higher than reported range of 65 to 86.6% in literature[17-19]. This was attributed to the increased pigmentation of oral lesion which is more in the Indian population. Burning sensation was a common complaint in patients of OLP (64.2%) in our study. According to Vincent et al, atrophic, bullous and erosive forms are the symptomatic forms of OLP[17]. Erosive pattern has been reported to be the most commonly symptomatic by Silvermann et al[18].

The patterns of CLP most commonly seen in our study were hypertrophic LP (34.9%) and classical LP (31.7%). Mahesh et al have reported that classical LP (26.7%) was the most common pattern seen and hypertrophic LP was seen only in 2.2% of their study population[9]. This difference could be explained by the fact that our study was conducted at a tertiary care centre with potential referral bias. Also, cases with hypertrophic LP were more frequently biopsied and it seems to be a logical explanation for this higher prevalence.

In our study among OLP, reticular pattern was the most common (42.9%), similar to studies by Thorn JJ and Andreason[5,20]. However, McClatchey et al found erosive pattern to be the most common[21]. Violaceous patches and hyperpigmented patches in patients with OLP (26.2% and 19% respectively) seen in our study are not reported in Western literature. However, a study by Singh et al on Indian patients found that pigmentation is more common in the dark races[8].

In our study, 9 of the 103 cases (8.7%) had concurrent OLP and CLP. The reported coexistence of skin and oral lesions ranges from 15.9% to 44%. In our study, the most common type of CLP seen in patients with OLP was classical LP (44.4 %) and the most common type of OLP seen in patients with CLP was the reticular pattern (50%). The frequency of CLP in OLP as per Omal et al is 0.06%[22]. In a study by Andreason et al, it was found that all morphological types of OLP had equal frequency of skin lesions except the ulcerative type in which concomitant skin lesions was seen only in four of twenty-three patients[5].

Studies on clinical and histopathological correlation are mainly limited to the West[23-25] except for very few Indian studies[9,16,26].

The key features which are consistent with a diagnosis of LP usually are a) hyperkeratosis, b) irregular acanthosis, c) basal cell vacuolation, d) civatte bodies and e) subepithelial band-like infiltrate. However there no uniform histopathological criteria for the diagnosis of LP.

Shklar and Meyer have proposed three main features for the diagnosis of OLP. They include 1) hyperkeratosis or parakeratosis, 2) infiltration of upper corium by a broad band of lymphocytic cells and 3) hydropic degeneration of stratum germinativum[27].

McClatchey et al have used hyperkeratosis and band like or clustered subepithelial infiltrate to make a diagnosis of OLP[21].

Krutchkoff has put forward the following criteria to make a histopathological diagnosis of OLP 1) basal cell liquefaction and 2) subepithelial band like lymphocytic infiltrate[28].

In our study, there was clinical and histopathological agreement in 85.4% of the cases. In McClatchey's study, clinical and histopathological agreement was seen in 96%[21]. The two studies cannot be compared as the histopathological criteria used to make a definitive diagnosis of LP were different. In a recent study by Mahesh et al, the clinicopathological concordance was 78.5%[9].

In a study by Garg et al where they studied 75 patients with LP, discrepancy between the clinical subtypes of LP and histopathology was seen in 7 patients[16].

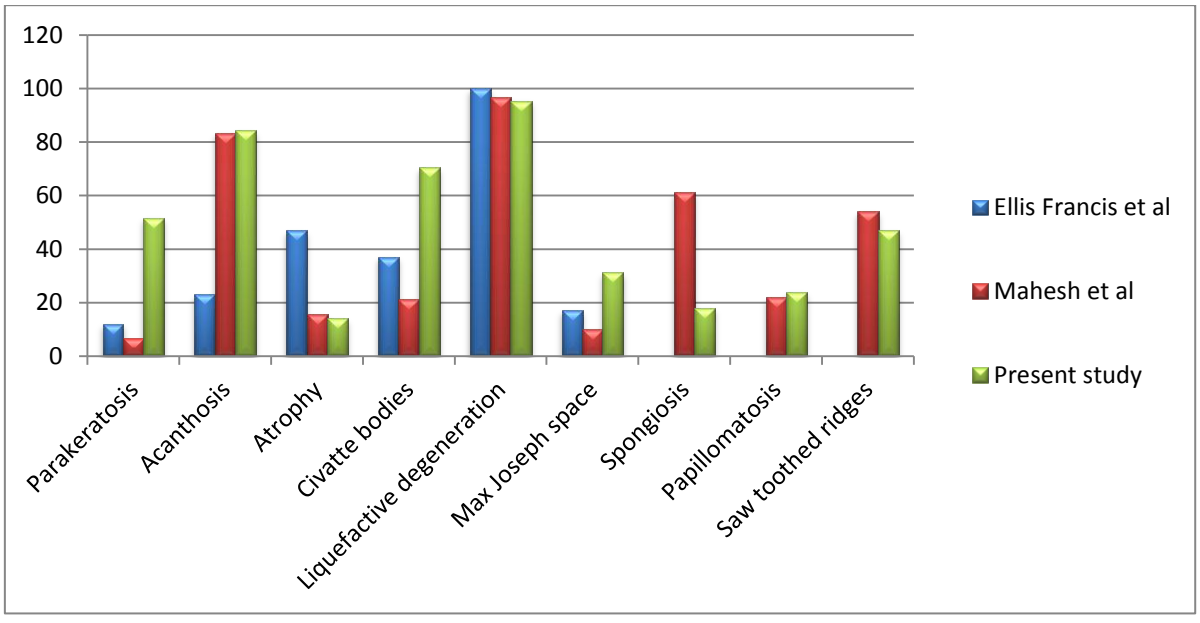

Figure 5: Histopathological changes in epidermis and comparison with other studies (CLP)

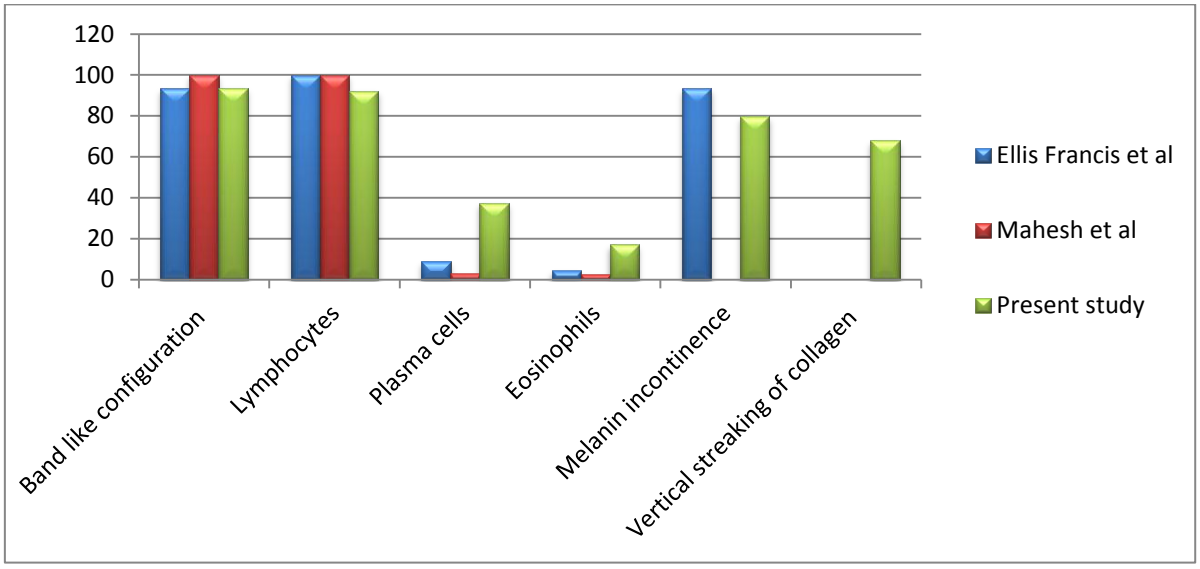

Figure 6: Histopathological changes in dermis and comparison with other studies (CLP)

An attempt was made to compare the different histological findings among the three studies as shown. Parakeratosis and vertical streaking of collagen bundles was seen in 51.6% and 68% cases respectively in our study. Studies done by Mahesh et al and Ellis et al have reported parakeratosis in 6.6% and 12%[9,29]. This may be possibly explained by a higher number of cases of hypertrophic LP in our study population. Hypertrophic LP was seen in 34.9% of CLP in our study as compared to 2.2% in study by Mahesh et al[9]. Other histopathological findings such as acanthosis and atrophy were similar in our study and the study done by Mahesh et al. Band like configuration and type of inflammatory cells were almost similar in the above three studies.

Civatte bodies were seen in 70% cases in our study population as compared to 37% and 21% in studies by Ellis et al and Mahesh et al.

Only few cases may show all of the histopathological changes most often mentioned in the literature. Lack of specific features does not unequivocally rule out LP. A biopsy specimen obtained from another site may reveal these confirmative specific features. In cases of OLP only early lesions of the reticular type and papular lesions have been shown to exhibit all the changes described as typical[30]. In our study, majority of the OLP lesions were more than 6 months duration and were not of the papular type.

Conclusion

There was agreement between the clinician and the pathologist in 85% of cases. Hypertrophic and classical types of CLP, and reticular and erosive types of OLP were common patterns in our study population. The combination of key histopathological features like hyperkeratosis, hypergranulosis, irregular acanthosis, basal cell liquefaction, band-like infiltrate and civatte bodies was seen in 45% of classical LP, 54.5% of hypertrophic LP and 60% of bullous LP. The key histopathological features of OLP seen were lymphocytic exocytosis, basal cell vacuolation and band-like infiltrate. Parakeratosis was seen in 91.7% cases.

Data Availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

"The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper."

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